USGS

Sound Waves

Coastal Science and Research News from Across the USGS

http://soundwaves.usgs.gov/

Fieldwork

West Maui Coastal Circulation Experiment: Understanding the Movement of Sediment, Coral Larvae, and Contaminants Along Coral Reefs

By Curt Storlazzi

From late June through mid-July, U.S. Geological Survey (USGS) scientists and technicians conducted fieldwork off West Maui, Hawai'i, to better understand coastal circulation and its effect on coral-reef health. Led by project chief **Mike Field** (USGS, Santa Cruz, CA), the cruises and instrument deployments were a continuation of the USGS Coral Reef Project's research in the eight main Hawaiian Islands. This research is part of the USGS' commitment to the U.S. Coral Reef Task Force, a multiagency group, cochaired by the U.S. Department of the Interior, which was established by Executive Order in 1998 to preserve and protect the biodiversity, health, heritage, and social and economic value of U.S. coral-reef ecosystems. The West Maui Coastal Circulation Experiment was undertaken as part of an ongoing effort led by the USGS to better understand the effect of geologic processes on coral-reef systems in the United States and its trust territories.

The USGS worked with numerous scientists from State and local agencies and organizations in its endeavor to understand the coastal circulation along West Maui, HI. While our main goals were to understand the coastal circulation's effects on the movement of sediment and contaminants, we chose the timing of the experiment to coincide with the spawning of the reef-building coral *Montipora capitata*, locally known as "rice coral," which was predicted to occur on the nights of June 30 through July 3. In this way, we could also attempt to track coral larvae and determine whether the poor health of certain reefs is due to insufficient new recruitment or other environmental factors, such as excess sediment, nutrients, or contaminants. West Maui was chosen because of the wide range in health of the coral ecosystems and the importance of the reef to local residents and tourists.

Nine bottom-mounted instrument packages were deployed on June 27 and 28 by divers **Mike**, **Curt Storlazzi** (USGS, Santa Cruz), **Josh Logan** (USGS, Santa Cruz), **Tom Reiss** (USGS, Menlo Park), and **Greg Piniak** (USGS, Santa Cruz). Eight of these packages measured waves,

(Circulation Experiment continued on page 2)

***Josh Logan** (left) and **Curt Storlazzi** deploy an instrument package to measure environmental parameters along the edge of the reef in Honolua Bay, Northwest Maui (see map, next page). Water depth is approximately 10 m. Photograph by **Mike Field**.*

Correction for July issue:

The authors of the article "Gas Hydrate in the Northern Gulf of Mexico Has Puzzling Characteristics and Could Pose a Hazard to Deep Drilling" were incorrectly reported in the mailed edition of the July 2003 *Sound Waves*. The correct author names are **Debbie Hutchinson** and **Pat Hart**. We apologize for the error.

—Editor

Sound Waves

Editor
Helen Gibbons
Menlo Park, California
Telephone: (650) 329-5042
E-mail: hgibbons@usgs.gov
Fax: (650) 329-5198

Print Layout Editors
Susan Mayfield, Sara Boore
Menlo Park, California
Telephone: (650) 329-5066
E-mail: smayfiel@usgs.gov; sboore@usgs.gov
Fax: (650) 329-5051

Web Layout Editor
Trent Faust
St. Petersburg, Florida
Telephone: (727) 803-8747 Ext. 3043
E-mail: tfaust@usgs.gov
Fax: (727) 803-2030

SOUND WAVES (WITH ADDITIONAL LINKS) IS AVAILABLE ONLINE AT URL
http://soundwaves.usgs.gov/

Contents

Submission Guidelines

Deadline: The deadline for news items and publication lists for the October issue of *Sound Waves* is Friday, September 12.
Publications: When new publications or products are released, please notify the editor with a full reference and a bulleted summary or description.
Images: Please submit all images at publication size (column, 2-column, or page width). Resolution of 200 to 300 dpi (dots per inch) is best. Adobe Illustrator© files or EPS files work well with vector files (such as graphs or diagrams). TIFF and JPEG files work well with raster files (photographs or rasterized vector files).

Any use of trade, firm, or product names is for descriptive purposes only and does not imply endorsement by the U.S. Government.

U.S. Geological Survey
Earth Science Information Sources:

Need to find natural-science data or information? Visit the USGS Frequently Asked Questions (FAQ's) at URL **http://ask.usgs.gov/faqs.html**

Can't find the answer to your question on the Web? Call **1-888-ASK-USGS**

Want to e-mail your question to the USGS? Send it to this address: **ask@usgs.gov**

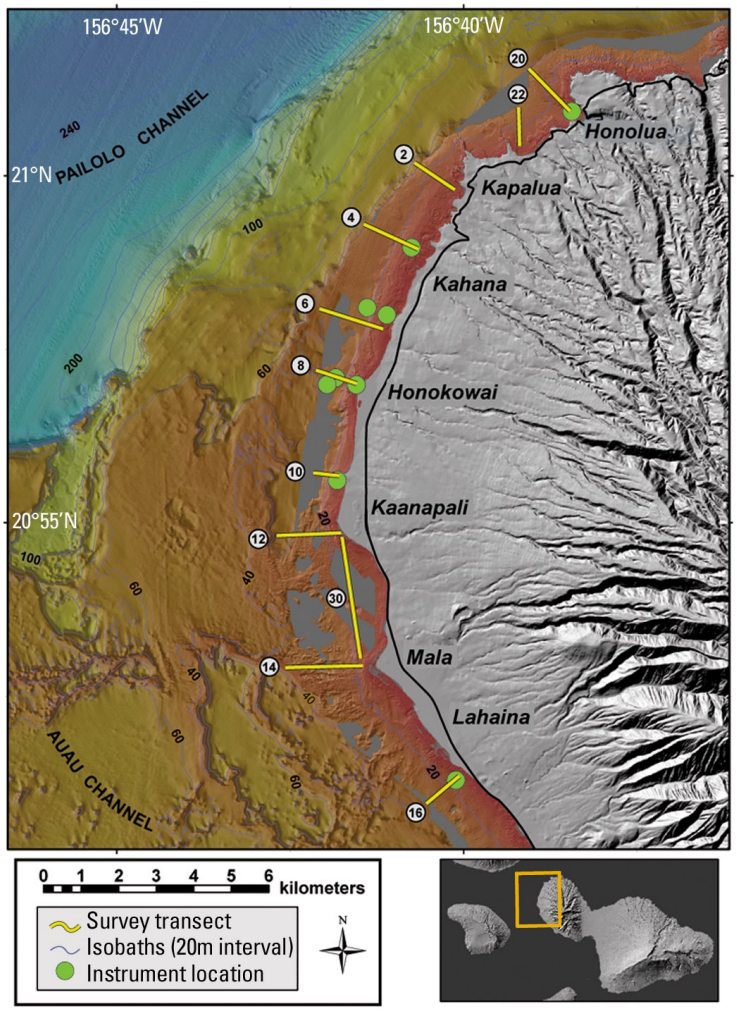
Fieldwork, continued

(Circulation Experiment continued from page 1)

tides, currents, temperature, salinity, and optical and acoustic backscatter; they were built, tested, and programmed before deployment by **Andrea Ogston** (University of Washington)**, Dave Gonzales** (USGS, Menlo Park, CA), **Kathy Presto** (University of Washington), **Josh**, and **Curt**. The ninth package was **Hank Chezar's** (USGS, Menlo Park) "Coral Imaging System," a bottom-imaging camera designed to monitor coral-larvae and sediment dynamics. All of these packages will remain on the sea floor for 3 to 4 months to make long-term environmental measurements and, we hope, to image different coral species' spawning events later in the summer.

Each day during the coral spawning, USGS and University of California, Santa Cruz (UCSC), scientists used a converted fishing vessel, the *Alyce C,* to conduct hydrographic surveys in order to get a better spatial view of the processes and environmental parameters being recorded by the bottom-mounted instruments. **Margaret McManus** (UCSC)**, Brian McLaughlin** (UCSC)**, Josh**, and **Curt** collected more than 11 km of vessel-mounted acoustic Doppler current-profiler (VM-ADCP) data and 20 conductivity-temperature-depth/optical-backscatter (CTD/OBS) profiler casts each day during the spawning event. They were joined on different days by **Greg Piniak**, who conducted larval tows to collect coral-larvae samples, and **Jodi Harney** and **Eric Grossman** (USGS, Santa Cruz), who collected laser-in-situ-scattering-and-transmissometry

(Circulation Experiment continued on page 3

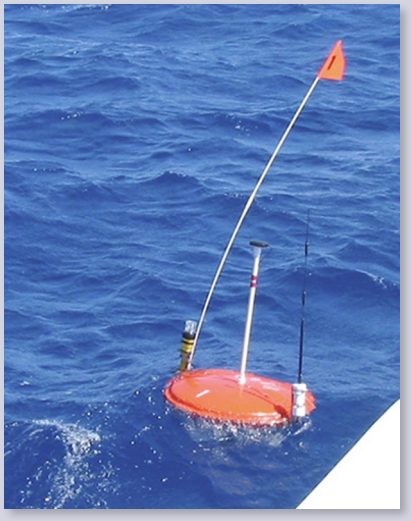


Map of the study area off West Maui; land in shades of gray, sea floor in shades ranging from brick-red (shallowest) to dark blue (deepest). Green dots are sites of USGS instrument packages. The drifters were deployed nightly off Honokawai, just above the instrument sites. Numbered yellow lines are transects along which data were collected from the Alyce C. *Map by* ***Josh Logan****. (Not for navigational purposes.)*

(Circulation Experiment continued from page 2)

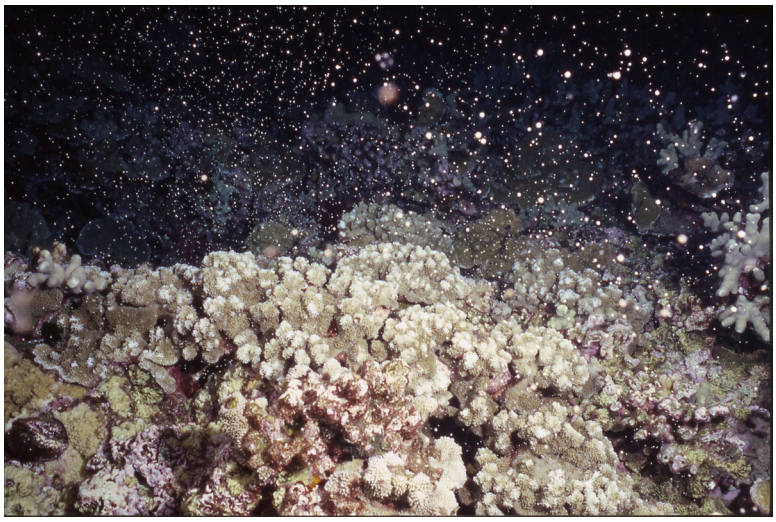
(LISST) data by attaching the LISST sensor to the CTD/OBS profiler. We hope that the larval tows and LISST data will permit us to calibrate the OBS' optical backscatter and VM-ADCP's acoustic backscatter so that we can use the VM-ADCP data to map the concentration and spatial distribution of coral larvae.

In an attempt to better understand water-mass and coral-larvae movement, radio-trackable differential-GPS (DGPS) drifters were deployed over a healthy reef each night when the coral larvae spawned at about 9:00 p.m. local (Hawai'i standard) time. These drifters, which were designed and built by **Tom Reiss** (USGS, Menlo Park), present minimal area to the wind and are moved instead by currents pushing against plastic fins, called "drogues," that can be mounted on the bottom of a drifter to measure currents at the surface or on a line attached to the drifter to measure currents below the surface. **Gerry Hatcher** (USGS, Santa Cruz) designed and fabricated the electronics placed inside each drifter, which transmitted the DGPS signal via radio so that **Gerry** and **Tom** could track all of the drifters from a base station onshore. The drifters transmitted their coordinates either directly to the base station in **Gerry** and **Tom's** hotel room or first to repeaters set up on the neighboring islands of Lanai and Molokai. Using geographic-information-system (GIS) software, **Gerry** and **Tom** were able to track and map the drifters' positions in real time, permitting USGS or cooperating personnel to recover them. Each night, two sets of two drifters, with one of each set drogued for surface currents and the other drogued for currents 3 to 5 m below the surface, were deployed from boats by **Tom** and **Mike**. **Tom**, **Gerry**, and **Mike** then allowed them to drift until they came ashore or made their bid for freedom out to sea. Personnel from the University of Hawai'i, the Maui Division of Aquatic Resources, Maui Community College, the U.S. Coast Guard, and the Maui Division of Ocean and Boating Recreation helped during the planning, permitting, deployment, and recovery of the drifters.



View from the Alyce C *approaching a DGPS drifter for recovery about 3 km offshore Kahana, Northwest Maui. From left to right on the drifter, the following items are visible: (1) orange bicycle flag and yellow strobe for collision avoidance; (2) orange drifter hull; (3) white DGPS antenna mast with black antenna at top; and (4) black radio antenna with white base, used to transmit position data to shore. This drifter had traveled almost 20 km in the 18 hours after it had been deployed and, at the time of this photograph, was moving north at a speed of 20 to 30 cm/s directly into a wind blowing south at more than 10 m/s. Photograph by* ***Brian McLaughlin*** *(UCSC).*

Greg and biologists **Eric Brown** (University of Hawai'i's Institute of Marine Biology), **Donna Brown** (Maui Community College), **Alan Ligon** (University of Hawai'i's Institute of Marine Biology), **John Gorman** (Maui Ocean Center), and **Erica Cushing** (Maui Ocean Center) collected data on the coral larvae and their recruitment success at several locations in the study area, most of which were co-located with the USGS' bottom-mounted instruments. This co-location will help us determine whether specific environmental factors (wave-induced stresses, temperature, salinity, and so on) are responsible for recruitment success at any given location. In a goodwill gesture, the biologists attempted, albeit rather unsuccessfully, to teach "rockhead" geologists **Mike**, **Tom**, **Josh**, **Eric**, and **Curt** how to identify and count coral larvae during scuba dives at night when the corals were spawning.



Underwater photograph of larvae being released into the water column from the coral species Montipora capitata *at approximately 9 p.m. on June 30. The white larvae are about 0.5 to 1.5 mm across. Photograph by* ***John Gorman*** *(Maui Ocean Center).*

We wish to thank **Captain Joe Reich** of the *Alyce C,* who was outstanding as usual in his support of the boat surveys, instrument deployments, drifter recoveries, and scuba operations. Thanks also to **Eric Brown**, who, in the middle of trying to write the last of his Ph.D. thesis (which will likely become "*THE*" book on Maui reefs), took on the extremely difficult and time-consuming task of coordinating the State and local agencies that contributed people, boats, and vehicles to the experiment. ❁

The Flood of June 2003 in Southwest Central Florida

By Richard Kane

A series of severe thunderstorms swept through southwest Central Florida on June 21 to 24. Precipitation associated with these storms resulted in flooding in parts of Desoto, Hardee, Manatee, and Sarasota Counties. Floodwater from these thunderstorms caused damage to public and private property amounting to more than $11 million and damaged or destroyed more than 100 homes.

Field crews from the U.S. Geological Survey (USGS)'s Tampa Hydrologic Data Section measured some of the highest discharge (flow) ever recorded at several gauging stations during the June 21-24 flood. Peak-discharge measurements were made at 24 stations. These data contribute to understanding flood behavior, enhance efforts to minimize destruction caused by floods, and provide data for planning.

Precipitation associated with these thunderstorms resulted in the highest peak flows recorded for the period of record at seven streamflow-gauging stations in Desoto, Hardee, Manatee, and Sarasota Counties. These stations and their peak (provisional) computed discharge values are listed below:

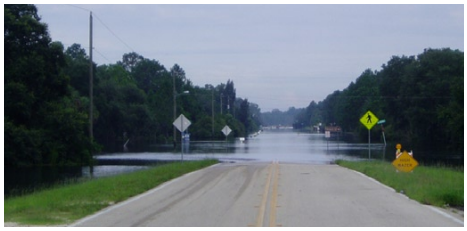
- Horse Creek near Myakka Head (3,400 cubic feet per second [cfs]),
- Myakka River upstream from Youngs Creek near Myakka City (4,690 cfs),
- Myakka River near Myakka City (8,500 cfs),
- Myakka River at Myakka City (12,900 cfs),
- Myakka River near Sarasota (11,100 cfs),
- Big Slough Canal at Tropicaire Boulevard near North Port (4,300 cfs), and
- Manatee River near Myakka Head (12,000 cfs).

Precipitation was recorded at several USGS gauging stations in southwest Central Florida and ranged from 9 to 17 inches for the period June 18-23, with the heaviest falling on June 21.

The Tampa Hydrologic Data Section operates a network of streamflow-gauging stations in southwest Central Florida in cooperation with Federal, State, and local agencies. Data from these stations are crucial for water-supply planning, flood monitoring, emergency response, dam and reservoir-system operation, establishing flood-insurance rates, and engineering and maintenance of bridges, roads, and other structures. Most of these stations provide real-time data through satellite relay or radio telemetry. The National Weather Service, the Southwest Florida Water Management District, and other agencies use the data to maintain water supplies, forecast floods, and issue flood warnings.

Big Slough Canal near Myakka City, June 23.

Acoustic Doppler Current Profiler (ADCP) recording discharge measurements at Big Slough Canal near Myakka City, June 23.



Big Slough Canal overflowing bridge and road at Tropicaire Boulevard near North Port, June 24.

BMW automobile submerged in water from Big Slough Canal at Tropicaire Boulevard near North Port, June 24.

Science Teachers and Curriculum Development: An Afternoon at the Woods Hole Field Center

By Ellen Mecray

The U.S. Geological Survey (USGS)'s Woods Hole Field Center (WHFC) hosted 15 middle- and high-school science teachers for an afternoon on July 1 as one stop on a weeklong Science Teacher Curriculum Development program organized by the Falmouth High School Science Department. The week included talks and tours of the Woods Hole Oceanographic Institution, the National Oceanic and Atmospheric Administration (NOAA)'s Northeast Fisheries Science Center, the Marine Biological Laboratory, and the USGS. Participating teachers were required to listen and learn about all aspects of the marine-science community and then write lesson plans based on their experiences that week. They are scheduled to return to the Falmouth area in the fall to present the results of their summer studies.

During the teachers' time at the USGS, **Ellen Mecray** gave them an overview of the various science projects being conducted at the WHFC, **Tammie Middleton** spoke about the use of geographic-information systems (GIS) in the USGS' Massachusetts Bay study, and **Mike Bothner** talked about the history of Boston Harbor and the USGS' long-term study of sewage effluent in the harbor. **Charlene Sullivan** allowed the teachers to stretch their legs by taking them outside (on a gorgeous summer day), where she talked about the SWASH (Surveying Wide-Area Shorelines) vehicle and the results of her work with **Jeff List** on shoreline erosion. To conclude the teachers' time with us, **Bill Winters** talked about the gas-hydrates project and organized a tour of the GHASTLI (Gas Hydrate and Sediment Testing Laboratory Instrument) and HyFI (Hydrates From Ice) labs with **Brandon Dugan** and **Bill Waite**.

*Coastal-erosion research assistant **Charlene Sullivan** (in white shorts) speaks with visiting teachers at the workshop on July 1, 2003, about her work with **Jeff List** on shoreline erosion and their use of the SWASH (Surveying Wide-Area Shorelines) vehicle (parked behind the group).*

USGS Scientist Addresses Teachers at the Sea Education Association

On July 8, U.S. Geological Survey (USGS) scientist **Mike Bothner** was invited to speak at the Sea Education Association in Woods Hole, MA, to an oceanography class of high-school teachers from around the United States. **Mike** reviewed the multidisciplinary science that has been applied by the USGS to pollution problems in Boston Harbor and Massachusetts Bay, and showed how our work supported many management decisions surrounding a $4-billion sewage-treatment upgrade and a court-ordered environmental-monitoring program. He also introduced the teachers to a novel demonstration of pressure in the ocean, using standard laboratory equipment.

School Children Taught About Sediment and How We Study It

Marinna Martini, of the U.S. Geological Survey (USGS)'s Woods Hole Field Center, was invited to give a talk to two classes at the Tisbury School in Vineyard Haven, MA, on June 13, 2003. She showed the students the differences between clay, silt, fine sand, and coarse sand; how we trap those particles; and how some of our instruments work.

USGS Hosts WETMAAP Workshops for Teachers

By Susan Horton

U.S. Geological Survey (USGS) geographer **Larry Handley** recently taught two WETMAAP (Wetland Education Through Maps and Aerial Photography) Workshops at the Florida Marine Research Institute in St. Petersburg, FL. Copresenters were **Kathryn Smith** (USGS, St. Petersburg, FL), **Catherine Lockwood** (Chadron State College, Nebraska), and USGS volunteer **Nathan Handley**.

WETMAAP (URL **http://www.wetmaap.org/**) integrates wetland issues into existing curriculums by introducing educators and students to wetland habitats, functions, and values; wetland mapping; digital data bases; and geographic-information-system (GIS) technologies. At the recent workshops, 44 teachers studied maps and aerial photographs of the Weedon Island Preserve along the Tampa Bay shore to see the changes in seagrass habitat and land use between 1951 and 2002.

Teachers study maps and aerial photographs of Weedon Island Preserve at WETMAAP Workshop.

On September 13, **Larry** and the WETMAAP team will present a workshop at the USGS' National Wetlands Research Center (Lafayette, LA) for Louisiana educators, using maps and aerial photographs from Avery Island, home of the internationally known Tabasco® pepper sauce. Avery Island is a rounded hill formed by cylindrical plugs of salt that have risen near the surface and formed a "salt dome." This dome, one of five such geologic formations in southern Louisiana, is one of the Gulf Coastal Plain's outstanding features, rising over 100 feet above the marshlands. Including Weedon Island Preserve and Avery Island, WETMAAP has 14 study sites in eight States. ❁

American Water Works Association's 2003 Annual Conference—Catch the Wave!

By Christina Kellogg

The American Water Works Association (AWWA), a major source of information on drinking water, hosted its annual conference and exposition in Anaheim, CA, from June 15 to 19. Approximately 11,000 of AWWA's 57,000 members attended the meeting, which featured sessions focused on all facets of water quality, water utilities, and water sustainability. A strong theme of this year's meeting was protecting water supplies and maintaining drinking-water security.

U.S. Geological Survey (USGS) microbiologist **Christina Kellogg** (St. Petersburg, FL) was an invited speaker for an international workshop, jointly sponsored by AWWA and the International Water Association (IWA), titled "International Perspectives and Case Studies: Source Water Protection." While source-water protection traditionally involves worries about toxic contaminants spilling or leaking into freshwater bodies used for drinking water, **Chris's** talk revealed the additional problem of atmospheric contaminants. She discussed various ways that microorganisms, chemicals, and nutrients can become aerosolized and then ride the wind to source waters kilometers distant. She also described how large amounts of airborne desert soils blow around the globe, carrying microbes, chemical contaminants, toxic metals, and naturally occurring radionuclides from one continent to another.

The Anaheim Convention Center hosted this year's AWWA annual conference and exposition.

The session, which included speakers from Australia, Britain, Canada, and the United States, was well received. It ended with a discussion panel in which all the speakers examined ways that the various challenges to source-water protection could best be addressed. ❁

Diversity Days in Reston, VA

By Jamey Reid

On June 3 and 4, the U.S. Geological Survey (USGS)'s Headquarters and Eastern Region Special Emphasis Program Advisory Committees (SEPACs) held the second annual Diversity Days celebration in Reston, VA.

USGS speakers for the event included Director **Chip Groat**, Deputy Director **Bob Doyle**, Eastern Region Director **Bonnie McGregor**, and Chief of Administrative Policy and Services **Carol Aten**. Department of the Interior (DOI) speakers included DOI Deputy Assistant Secretary for Human Resources and Workforce Diversity **Mike Trujillo** and DOI Deputy Director for the Office of External and Intergovernmental Affairs **Daniel Garza**. **Imogene Bynum** from the Eastern Region SEPAC moderated the sessions on both days.

Entertainment included a swing-dance demonstration and instruction by **Paul Togan**, and performances by the Westfield High School Step Team and the Cedar Lane High School Band. Both days included a tasting of ethnic foods and a viewing of videos related to diversity issues.

The highlight of the event was a panel discussion titled "Debunking the Myth that Hiring Diverse Candidates Lowers the Standards." The panel was composed of eight diverse USGS employees, representing the eight SEPAC focus groups, including **Pam Malam** (Women), **Bob Doyle** (Multicultural), **Alan Mikuni** (Asian American), **Ivette Torres** (Hispanic), **Ike Kelley** (Gay, Lesbian, Bisexual, Transgender), **Amy Berger** (Disabilities), **Jo Margaret Hale** (African American), and **Donna Foulke** (Native American). They all told their stories of diversity from many different perspectives—the joys and successes, as well as the aches and pains, of struggling to succeed in environments that may have not embraced diversity.

For more information about SEPAC, please visit the SEPAC Web site (accessible to employees via the USGS Intranet) or contact **John Szemraj** in the Office of Equal Opportunity at 703-648-7011.

*The Westfield High School Step Team. Photograph by **Linda Peng**.*

*➔(From left to right) Headquarters SEPAC member **Dottie Harris** along with Eastern Region SEPAC members **Maria Arguelles** and **Imogene Bynum**. Photograph by **Linda Peng**.*

*←Headquarters SEPAC Chair **Celso Puente** (left) along with USGS Deputy Director **Bob Doyle** and Chief of Administrative Policy and Services **Carol Aten**. Photograph by **Linda Peng**.*

*➔DOI speakers **Daniel Garza** (left) and **Mike Trujillo**. Photograph by **Linda Peng**.*

International Conference on Continental Shelf Limits

By Jonathan Childs

U.S. Geological Survey (USGS) scientists **Debbie Hutchinson** (Woods Hole, MA) and **Jon Childs** (Menlo Park, CA) attended the Conference on Legal and Scientific Aspects of Continental Shelf Limits, held in Reykjavik, Iceland, June 25 through 27. With more than 40 nations and the United Nations represented, the conference focused on the intersection of science, law, and politics that has been created by the United Nations Convention on the Law of the Sea (UNCLOS) and, in particular, Article 76, which defines how a coastal nation might extend the limits of its continental margin beyond 200 nautical miles. The United States signed UNCLOS during the **Clinton** administration, but the Senate has not yet ratified it. **President Bush** has expressed his support for ratification, and expectations are that ratification will occur in the near future. Pre-

(Continental Shelf Limits continued on page 8)

(Continental Shelf Limits continued from page 7)

senters at the conference included **Larry Mayer** (University of New Hampshire and a frequent collaborator with USGS coastal and marine scientists) and **Art Grantz** (Stanford University and USGS, retired). After the proceedings, the organizers sponsored an excursion around southwestern Iceland.

*USGS scientists (from left to right) **Debbie Hutchinson** (Woods Hole, MA), **Margaret Keller** (Menlo Park, CA), and **Jon Childs** (Menlo Park, CA) are standing on the American Plate, against a backdrop of the exposed Mid-Atlantic Ridge where it intersects Iceland, with the European Plate in the background.*

Tampa Bay Wetland Restoration Research Workshop

By Ginger Tiling

On July 24-25, scientists from the U.S. Geological Survey (USGS), the Florida Department of Environmental Protection, the Southwest Florida Water Management District, and Pinellas County met to exchange ideas and discuss wetland-restoration issues pertaining to Tampa Bay at the Tampa Bay Wetland Restoration Research Workshop. The USGS hosted the workshop at the Weedon Island Visitors Center in St. Petersburg, FL. The goal of the workshop was twofold: to ascertain the science-information needs of land managers and to identify research questions that can be addressed by the USGS Tampa Bay Study.

Workshop scientists presented summary talks on work currently underway or in active planning stages at the State of Florida's Terra Ceia Aquatic Preserve and at Pinellas County's Weedon Island and Mobbly Bayou Preserves. Hydrologic changes to wetlands (ditching for mosquito control) are common to all three sites. Managers gave overviews on preserve features and management challenges. Workshop participants discussed historical perspectives and future ecological goals for wetland restoration. Open discussion led to clarification of research needs. There was a consensus that diverse baseline or prerestoration data are essential to judging the success of restoration projects at all the preserve sites.

Ideally, baseline data required for each of the sites discussed would include:

- Surface-water characterization (stage, salinity)
- Ground-water influence
- Mosquito-ditch functionality for fish use
- Historical vegetation patterns pre- and post-ditching
- Faunal surveys for reptiles, amphibians, birds
- Baseline topography at select locations

Participants will work in smaller, focused groups to implement the necessary monitoring and research activities. Given that the timeframe for the Terra Ceia site is immediate, work will begin first at this site and will be phased in at the other two restoration sites.

For more information on Weedon Island and Mobbly Bayou Preserves, visit Pinellas County's Environmental Management Web site at URL **http://www.pinellascounty.org/Environment/pagesHTML/envLands/el1000.html**, and the Weedon Island Preserve Web site at URL **http://www.pinellascounty.org/environment/pagesHTML/envLands/el2300.html**. For information about the Tampa Bay Study, visit the USGS Tampa Bay Study Web site at URL **http://gulfsci.usgs.gov/tampabay/**.

USGS Mendenhall Fellow Invited to Speak at the German-American Frontiers of Science Symposium

By Christina Kellogg

U.S. Geological Survey (USGS) Mendenhall Postdoctoral Fellow **Christina Kellogg** (St. Petersburg, FL) was invited to speak at this year's German-American Frontiers of Science symposium, where she discussed the impacts of African dust on coral reefs.

The German-American Frontiers of Science Symposium series is sponsored by the National Academy of Sciences and the Alexander von Humboldt Foundation and supported, in part, with funding from the Beckman Foundation and the Agouron Institute. This year's conference, the ninth annual meeting, was held June 5-7 in Irvine, CA, at the Arnold and Mabel Beckman Center of the National Academies.

These symposia are held each summer, alternating between the United States and Germany. Participation at the symposium is split evenly between Germans and Americans, although there is a more international flavor than the name might imply—many of the scientists representing American institutions were originally from other countries, including Britain, Austra-

(German-American continued on page 9)

(German-American continued from page 8)

lia, and China. Participants are specifically chosen by the organizing committee and include leading researchers from academic, industrial, and federal laboratories.

Attendees are selected from a pool of young researchers (less than 45 years old) who have made significant contributions to science, including recipients of Sloan, Packard, and MacArthur fellowships; winners of the Waterman Award; Beckman Young Investigators; and NSF Presidential Faculty Fellows. This year we can add "USGS Mendenhall Fellow" to that list; **Christina Kellogg** was invited to speak about the impacts of African dust on coral reefs.

At each symposium, approximately 25 young scientists report on current research within their disciplines to an academically trained and scientifically diverse audience. They highlight major research challenges, methodologies, and limitations to progress at the frontiers of their respective fields. All attendees participate in a general discussion period, during which they learn from and form collaborative relationships with other young scientists in different fields.

The topics, chosen each year by an organizing committee made up of the previous year's speakers and organizers, include a broad spectrum of subjects, ranging from neuroscience to theoretical physics. The 2003 program consisted of the following topical sessions:

- Biology of Aging
- Coral Reefs
- Formation of Stars
- Molecular Motors/Biomotors
- Nanomaterials/Molecular Electronics
- Polymers with Memory
- Probing Space-Time Structure near Black Holes
- Timing in the Brain

Christina's talk on African dust stimulated a lot of discussion, and she was invited to join the organizing committee for the 2004 symposium. She is hard at work writing proposals for next year's sessions and is looking forward to visiting Germany next year.

The Arnold and Mabel Beckman Center, located near the University of California, Irvine, is the site of the German-American Frontiers symposium when it is held in the United States.

Coastal and Marine Geology Program's 2003 Knowledge Bank Workshop: Initiating MontereyBayScience.org

By Carolyn Degnan and Trent Faust

From June 16 to 19, the U.S. Geological Survey (USGS)'s Coastal and Marine Geology Program (CMGP) held its third Knowledge Bank Workshop at the Woods Hole Oceanographic Institution's Quissett Campus in Woods Hole, MA. The purpose of this workshop was to map out a strategy and launch a National Knowledge Bank Project prototype.

Workshop leaders **Fran Lightsom** (Woods Hole), **Debbie Hutchinson** (Woods Hole), **Rob Wertz** (St. Petersburg, FL), **Trent Faust** (St. Petersburg), **Fausto Marincioni** (Woods Hole), and **Dennis Krohn** (St. Petersburg) welcomed 29 participants from headquarters in Reston, VA, and field centers in Menlo Park, CA, St. Petersburg, FL, and Woods Hole, MA. The workshop benefited from the insight and advice of **Dawn Lavoie**, CMGP Associate Program Coordinator. Adding perspectives from outside CMGP were representatives from the Director's Office (**David Govoni**), the Geography Discipline (**Roger Barlow**), and private industry (**Sam Hunting**, of eTopicality, Inc.).

Trent Faust led a half-day seminar on user-centered information-architecture design, which addressed several of the issues facing the Knowledge Bank. This seminar was an abbreviated version of a full-day seminar presented by Adaptive Path, a consulting firm that specializes in assisting companies in the development of information architectures which communicate effectively to their users. Incorporating principles of user-centered design and usability testing, this information-architecture process will help guide the construction and evolution of current and future online Knowledge Bank products.

(Knowledge Bank continued on page 10)

***Trent Faust** describes the iterative process of building an information architecture. Photograph by **Heather Henkel**.*

***Rob Wertz** (left) and **David Govoni** classify tasks as a first step in an exercise in information-architecture design. Photograph by **Renee Koenig**.*

(Knowledge Bank continued from page 9)

The workshop series was begun in response to the National Research Council (NRC)'s Grand Challenge 2: to develop a national knowledge bank—a comprehensive inventory of data held by various groups and agencies—on the geologic framework of the U.S. coastal and marine regions. The first workshop was a brainstorming session to establish a project vision and goals. The second workshop undertook the task of planning a response to the NRC's challenge. The 2003 workshop affirmed the commitment to develop a knowledge bank by initiating a pilot Web site for the Monterey Bay area named **MontereyBayScience.org**.

Monterey Bay was chosen as the pilot site because it is a coastal area that has national visibility, a large holding of previously collected USGS data, and an already-established coalition of partners. **Rex Sanders** (Menlo Park) noted, "We have an opportunity to provide leadership, expertise, and limited resources, to lead a diverse scientific community to greater accomplishment."

*(Left to right) Marine Realms Information Bank (MRIB) creators **Rebecca Riall** and **Fausto Marincioni** with Knowledge Bank summer intern **Mital Shah**. Photograph by **Renee Koenig**.*

MontereyBayScience.org will have three primary uses:

- Data access—users can create more scientific knowledge based on existing data
- Decisionmaking—users can make better decisions using the best available science
- Education—users can learn more about Monterey Bay and the science behind the data

MontereyBayScience.org will begin building with existing information-management services. Here are some that were noted at the meeting:

- Library catalog—Marine Realms Information Bank (MRIB) (**http://mrib.usgs.gov/**)
- Data catalog—USGS CMG InfoBank (**http://walrus.wr.usgs.gov/infobank/**)
- CMGP Internet map server (**http://kai.er.usgs.gov/**)
- usSEABED (Web site under development; see article in August 2002 *Sound Waves* at URL **http://soundwaves.usgs.gov/2002/08/meetings2.html**)
- *Sound Waves* monthly newsletter (**http://soundwaves.usgs.gov/**)
- USGS publications server (**http://pubs.usgs.gov/**)
- USGS Woods Hole Distributed Ocean Data Systems (DODS) data server (**http://stellwagen.er.usgs.gov/**)

MontereyBayScience.org will be much more than just a Web site; it will support maps, fact sheets, pamphlets, posters, services, presentations, and symposiums and will reuse existing materials to create new products.

MontereyBayScience.org will represent much more than just the CMGP; it will be a cooperative effort. The workshop identified more than 30 potential partners outside the USGS and 6 potential partners inside the USGS. All partners will benefit by combining their strengths and limited resources to create products and services no single institution could afford.

For more information about **MontereyBayScience.org**, contact:

Rex Sanders, 650-329-5196, **rsanders@usgs.gov**

Dennis Krohn, 727-803-8747 x3062, **dkrohn@usgs.gov**

***Sam Hunting** (left) and **Valerie Paskevich** group content in the second exercise in the information-architecture-design seminar. Photograph by **Renee Koenig**.*

*(Left to right) **Dennis Krohn**, **Carolyn Degnan**, **Greg Miller**, and **Fran Lightsom** finish their exercise in the information-architecture-design process. Photograph by **Renee Koenig**.*

*(Left to right) **VeeAnn Atnipp Cross** (standing), **Damon Dunson**, **Rebecca Riall**, **Guthrie Linck**, and **Chuck Denham** work on the information-architecture-design exercise. Photograph by **Renee Koenig**.*

***Debbie Hutchinson** works with her laptop—literally. Photograph by **Renee Koenig**.*

Awards

USGS Scientist Receives Award from Southern University

By Susan Horton

Virginia Burkett of the U.S. Geological Survey (USGS)'s National Wetlands Research Center in Lafayette, LA, received an award from the Chancellor of Southern University in Baton Rouge, LA, for her contributions to the university in support of faculty research and for "minority student and faculty enhancement." **Virginia** has collaborated with Southern University faculty and staff during the past 5 years on climate-change and wetland research and has assisted in developing internships and training opportunities for graduate and undergraduate students. She was honored on June 18 at the National Urban and Community Forestry Education and Outreach Conference for Minority and Underserved Communities, cosponsored by Southern University and the USDA Forest Service's Civil Rights Unit.

Staff and Center News

Woods Hole Visitor from the National Research Council

Judy Nyquist, Deputy Director and Program Administrator for Associateship Programs in the Policy and Global Affairs Division of the National Research Council, visited the U.S. Geological Survey (USGS)'s Woods Hole Field Center on June 18. **Judy** discussed postdoctoral programs with center chief **Bill Schwab** and **Eric Sundquist** (National Research Program, Water Resources Discipline) and then discussed carbon-cycle research with **Eric**. After a brief tour of **Eric's** lab, **Judy** and **Eric** were given a tour of the center's gas-hydrate facilities, including the GHASTLI (Gas Hydrate and Sediment Testing Laboratory Instrument) and HyFI (Hydrates From Ice) labs, and were briefed on laboratory and field gas-hydrate activities being conducted out of Woods Hole.

Publications

Recently Published Articles

Ashton, A., List, J.H., Murray, A.B., and Farris, A.S., 2003, Links between erosional hotspots and alongshore sediment transport: Coastal Sediments '03, Annual Symposium on Coastal Engineering and Science of Coastal Sediment Processes, 5th, Clearwater Beach, Fla., May 18-23, 2003, Proceedings, 13 p. [CD-ROM].

Bothner, M.H., Casso, M.A., Rendigs, R.R., and Lamothe, P.J., 2002, The effect of the new Massachusetts Bay sewage outfall on the concentrations of metals and bacterial spores in nearby bottom and suspended sediments: Marine Pollution Bulletin, v. 44, p. 1063-1070.

Boustany, R.G., 2003, A pre-vegetated mat technique for the restoration of submersed aquatic vegetation: Ecological Restoration, v. 21, p. 2.

Cacchione, D.A., Carlson, P.R., Chavez, P.F., Jr., Chin, J.L., Dartnell, Peter, Gardner, J.V., Gibbons, Helen, Rubin, D.M., Velasco, Miguel, and Wong, F.L., 2003, Under San Francisco Bay—a new view of the floor of west-central San Francisco Bay: U.S. Geological Survey Open-File Report 01-90 [poster; URL **http://geopubs.wr.usgs.gov/open-file/of01-90/**].

Calderon, K., Dadisman, S.V., Kindinger, J.L., Flocks, J.G., and Wiese, D.S., 2003, Archive of boomer seismic reflection data collected during USGS cruise 96CCT01, nearshore south central South Carolina coast, June 26-July 1, 1996: U.S. Geological Survey Open-File Report 03-239 [CD-ROM].

Coté, J.M., Hotchkiss, F.S., Martini, M.A., Denham, C.R., and Ramsey, A.L., 2003, Acoustic doppler current profiler data processing system manual: U.S. Geological Survey Open-File Report 00-458, ver. 2 [URL **http://pubs.usgs.gov/of/of00-458/**].

Gayes, P.T., Schwab, W.C., Driscoll, N.W., Morton, R.A., Baldwin, W.E., Denny, J.F., Wright, E.E., Harris, M.S., Katuna, M.P., Putnev, T.R., and Johnstone, E., 2003, Sediment dispersal pathways and conceptual sediment budget for a sediment starved embayment; Long Bay, South Carolina: Coastal Sediments '03, Annual Symposium on Coastal Engineering and Science of Coastal Sediment Processes, 5th, Clearwater Beach, Fla., May 18-23, 2003, Proceedings, 14 p. [CD-ROM].

Hammar-Klose, E.S., Twichell, D.C., and Worley, C.R., 2003, Archive of sidescan-sonar data and DGPS navigation data, collected during USGS cruise SUNC01010, Pulley Ridge, Gulf of Mexico, 05 September - 12 September 2001: U.S. Geological Survey Open-File Report 02-155 [DVD-ROM].

Hemphill-Haley, Eileen, and Lewis, R.C., 2003, Diatom data from Bradley Lake, Oregon; downcore analyses: U.S.

(Recently Published continued on page 12)

(Recently Published continued from page 11)

Geological Survey Open-File Report 03-190 [URL **http://geopubs.wr.usgs.gov/open-file/of03-190/**].

Jenkins, J.A., and Dale, R.O., 2003, Novel diagnostic biomarkers from aquatic animals [abs.], *in* USGS Conference on Natural Science and Public Health; Prescription for a Better Environment: U.S. Geological Survey Open-File Report 03-097 (unpaginated).

Jenkins, J.A., DeCola, L., Barton, C.C., Buys, J., and Manheim, F.T., 2003, Nonlinear approaches to understanding human and environmental health [abs.], *in* USGS Conference on Natural Science and Public Health; Prescription for a Better Environment: U.S. Geological Survey Open-File Report 03-097 (unpaginated).

Kellogg, C.A., and Griffin, D.W., 2003, Atmospheric impacts on source water quality: American Water Works Association Annual Conference, Anaheim, CA, June 15-19, 2003, Proceedings [CD-ROM].

Lee, H.J., McQuarrie, Megan, and Hibbeler, Lori, 2003, Tracking contaminants in Santa Monica Bay, offshore of Greater Los Angeles: U.S. Geological Survey Fact Sheet 155-02 [URL **http://geopubs.wr.usgs.gov/fact-sheet/fs155-02/**].

Lidz, B.H., Reich, C.D., and Shinn, E.A., 2003, Regional Quaternary submarine geomorphology in the Florida Keys: Geological Society of America Bulletin, v. 115, no. 7, p. 845-866 [includes oversize color plate of Pleistocene topographic and Holocene isopach maps].

List, J.H., Farris, A.S., and Sullivan, Charlene, 2003, The large-scale response of foreshore slope to storm events: Coastal Sediments '03, Annual Symposium on Coastal Engineering and Science of Coastal Sediment Processes, 5th, Clearwater Beach, Fla., May 18-23, 2003, Proceedings, 14 p. [CD-ROM].

Lorenson, T.D., Dougherty, J.A., Ussler, William, III, and Paull, C.K., 2003, Cruise summary for P-1-02-SC; acoustic imaging of natural oil and gas seeps and measurement of dissolved methane concentration in coastal waters near Pt. Conception, California: U.S. Geological Survey Open-File Report 03–122 [URL **http://geopubs.wr.usgs.gov/open-file/of03-122**].

Moore, L., Morton, R., and Sallenger, A., 2003, Historical coastal change hazards for the conterminous United States and Hawaii; initial progress under the USGS National Coastal Assessment: U.S. Geological Survey Open-File Report 02-191, 6 p.

Morton, R.A., and Peterson, R.L., 2003, West-Central Florida coastal classification maps – Anclote Key to Venice Inlet: U.S. Geological Survey Open-File Report 03-227 [URL **http://pubs.usgs.gov/of/2003/of03-227/**].

Poag, C.W., 2002, The synimpact-postimpact transition inside Chesapeake Bay crater: Geology, v. 30, p. 995-998.

Poag, C.W., Mankinen, E., and Norris, R.D., 2003, Late Eocene impacts—geologic record, correlation, and paleoenvironmental consequences, *in* Prothero, D.R., Ivany, L.C., and Nesbitt, E., eds., From greenhouse to icehouse; the marine Eocene-Oligocene transition: New York, Columbia University Press, p. 495-510.

Poppe, L.J., Eliason, A.H., and Hastings, M.E., 2003, A Visual Basic program to classify sediments based on gravel-sand-silt-clay ratios: Computers and Geosciences, v. 29, no. 6, p. 805-809 [CD-ROM; URL **http://www.iamg.org/CGEditor/cg2003.htm**].

Ramsey, D.W., Dartnell, Peter, Bacon, C.R., Robinson, J.E., and Gardner, J.V., 2003, Crater Lake revealed: U.S. Geological Survey Geologic Investigations Series I-2790 [poster; URL **http://geopubs.wr.usgs.gov/i-map/i2790/**].

Rooth, J.E., Stevenson, J.C., and Cornwell, J.C., 2003, Increased sediment accretion rates following invasion by *Phragmites australis*; the role of litter: Estuaries, v. 26, no. 2B, p. 475-483.

Senthilnathan, K., Lippmann, T.C., and List, J.H., 2003, The relationship of nearshore sand bar configuration to shoreline change: Coastal Sediments '03, Annual Symposium on Coastal Engineering and Science of Coastal Sediment Processes, 5th, Clearwater Beach, Fla., May 18-23, 2003, Proceedings, 7 p. [CD-ROM].

Shinn, E.A., Reich, C.D., Hickey, T.D., and Lidz, B.H., 2003, Staghorn tempestites in the Florida Keys: Coral Reefs, v. 22, no. 2, p. 91-97.

Stolper, David, 2003, Modelling the evolution of estuaries and their intertidal zones [abs.]: Coastal Sediments '03, Annual Symposium on Coastal Engineering and Science of Coastal Sediment Processes, 5th, Clearwater Beach, Fla., May 18-23, 2003, Proceedings, 15 p. [CD-ROM].

Williams, S.J., 2003, Coastal and marine processes, chap. 1.1.3.2 *of* Cilek, V., ed., Encyclopedia of life support systems (EOLSS), developed under the auspices of the UNESCO: Oxford, UK, Eolss Publishers, 13 p. [URL **http://www.eolss.net/**].

Williams, S.J., Jenkins, C., Currence, J., Penland, S., Reid, J., Flocks, J., Kindinger, J.L., Poppe, L.J., Kulp, M., Manheim, F.T., Hampton, M., Polloni, C.F., and Rowland, J., 2003, New digital geologic maps of U.S. continental margins; insights to seafloor sedimentary character, aggregate resources and processes: Coastal Sediments '03, Annual Symposium on Coastal Engineering and Science of Coastal Sediment Processes, 5th, Clearwater Beach, Fla., May 18-23, 2003, Proceedings, 12 p. [CD-ROM].

Publications Submitted for Director's Approval

Auster, P.J., Lindholm, J., and Valentine, P.C., Primary and secondary habitats of juvenile Acadian redfish *(Sebastes fasciatus)*; patterns of differential survival or elements of a redfish pump?: Environmental Biology of Fishes.

Barth, G.A., Scholl, D.W., and Childs, J.R., Concentrated accumulations of natural gas and hydrate in the Aleutian Basin of the Bering Sea [abs.]: Geological Society of America Annual Meeting, Seattle, Wash., November 2-5, 2003.

Calderon, K., Dadisman, S.V., Flocks, J.G., Kindinger, J.L., and Wiese, D.S., Archive of boomer seismic reflection data collected during USGS cruises 01SCC01 and 01SCC02, Timbalier Bay and

(Publications Submitted continued on page 13)

(Publications Submitted continued from page 12)

offshore E. Timbalier Island, Louisiana, June-August 2001: U.S. Geological Survey Open-File Report.

Calderon, K., Dadisman, S.V., Flocks, J.G., Wiese, D.S., and Kindinger, J.L., Archive of chirp seismic reflection data collected during USGS cruises 01SCC01 and 01SCC02, Timbalier Bay and offshore E. Timbalier Island, Louisiana, June 30-July 9 and August 1-12, 2001: U.S. Geological Survey Open-File Report.

Clayton, T.D., Wright, C.W., and Brock, J.C., Airborne lidar o'er land and sea; advances in environmental characterization and assessment [abs.]: Frontiers in Assessment Methods for the Environment (FAME), Minneapolis, Minn., August 10-13, 2003.

Cross, V.A., and Twichell, D.C., Using GIS to model the Holocene evolution of the Columbia River littoral cell: Submarine Geology.

Fildani, Andrea, and Normark, W.R., The stratigraphic evolution of Monterey Fan area and growth patterns of related channel and lobe complexes: Marine Geology.

Fisher, M.A., Pellerin, Louise, Glen, J.M., Ratchkovski, N.A., and Nokleberg, W.J., A geophysical transect across the Alaska Range; relationship between crustal structure and the November, 2002, M=7.9 Denali earthquake [abs.]: Geological Society of America Annual Meeting, Seattle, Wash., November 2-5, 2003.

Gelfenbaum, Guy, and Lesser, Giles, Coastal morphological response to co-seismic subsidence and tsunamis in the Pacific Northwest [abs.]: Geological Society of America Annual Meeting, Seattle, Wash., November 2-5, 2003.

Hallett, B.W., Poppe, L.J., and Brand, S.G., Petrography and character of the bedrock surface beneath western Cape Cod, Massachusetts: Northeastern Geology and Environmental Sciences.

Hallett, B.W., Poppe, L.J., and Brand, S.G., Petrography and character of the bedrock surface beneath western Cape Cod, Massachusetts [abs.]: Geological Society of America, Boise, Idaho, May 4-5, 2004.

Holmes, C.W., and Buster, N.A., Isotopic measurements by Laser-Ablation-ICP/MS in corals, a new look at an old problem [abs.]: Geological Society of America Annual Meeting, Seattle, Wash., November 2-5, 2003.

Holmes, C.W., and Marot, M.E., SLIC—when it is good, it is very very good, and when it is bad, it's horrid [abs.]: Geological Society of America Annual Meeting, Seattle, Wash., November 2-5, 2003.

Holmes, C.W., and Miller, R., Atmospherically transported metals and deposition in the southeastern United States; local or transoceanic?: Applied Geochemistry.

Hostettler, F.D., Wang, Yi, Huang, Yongsong, Cao, Weihuan, and Bekins, B.A., Non-polar products of anaerobic biodegradation of n-alkanes under methanogenic conditions in the oil spill at Bemidji, MN [abs.]: Organic Geochemistry [invited comment].

Hutchinson, D., Sanders, R., and Faust, T., Making U.S. Geological Survey information effective in the electronic age: U.S. Geological Survey Open-File Report 03-240, 66 p.

Kvenvolden, K.A., Size of the global methane hydrate endowment [abs.]: Geological Society of America Annual Meeting, Seattle, Wash., November 2-5, 2003.

Lorenson, Thomas, Winters, William, Paull, Charles, Ussler, William, III, and Dougherty, Jennifer, Modeling of gas hydrate occurrence in the northern Gulf of Mexico from giant piston cores [abs.]: Geological Society of America Annual Meeting, Seattle, Wash., November 2-5, 2003.

Minasian, D.L., Lee, H.J., Locat, Jaques, Orzech, K.M., Martz, G.R., and Israel, Kenneth, The STRATAFORM Project; U.S. Geological Survey geotechnical studies: U.S. Geological Survey Open-File Report.

Parsons, Tom, Recalculated probability of M>7 earthquakes beneath the Sea of Marmara, Turkey: Journal of Geophysical Research.

Peters, R.B., Jaffe, Bruce, Gelfenbaum, Guy, Rubin, D.M., Anima, Roberto, Swensson, Matt, Olcese, Daniel, Anticona, L.B., Gomez, J.C., and Riega, P.C., Sedimentary deposits from the June 23, 2001, Peru tsunami [abs.]: International Tsunami Symposium, Seattle, Wash., August 7-10, 2003.

Rosenbauer, R.J., and Koksalan, Tamer, Experimental CO_2-saturated brine-rock interactions at elevated temperature and pressure; implications for CO_2 sequestration in deep-saline aquifers [abs.]: Geological Society of America Annual Meeting, Seattle, Wash., November 2-5, 2003.

Scanlon, K.M., Coleman, F.C., and Koenig, C.C., Pockmarks on the outer shelf in the northern Gulf of Mexico, *in* Symposium on Effects of Fishing Activities on Benthic Habitats; Linking Geology, Biology, Socioeconomics, and Management, Tampa, Fla., November 12-14, 2002: American Fisheries Society Special Publication.

Warrick, J.A., Lee, H.J., Noble, M.A., Xu, Jingping, Edwards, B.D., Orzech, K.M., and Alexander, C.R., Emerging concepts in sediment transport for southern California rivers and coastal waters [abs.]: Headwaters to Oceans (H_2O) Conference (Integrating Rivers, Wetlands, and Coastlines in an Urban Environment), Long Beach, Calif., October 23-25, 2003.

Warrick, J.A., Washburn, Libe, Brzezinski, M.A., and Siegel, D.A., Nutrient contributions to the Santa Barbara Channel from the ephemeral Santa Clara River: Estuarine, Coastal and Shelf Science.

Wong, F.L., Anima, R.J., Galanis, Peter, Codianne, Jennifer, Xia, Yu, Bucciarelli, Randy, and Hamer, Michael, Grand Canyon riverbed sediment changes, experimental release of September 2000—a sample data set: ESRI International User Annual Conference, 23d, San Diego, Calif., July 7-11, 2003 [poster].